

WEST Search History

DATE: Monday, November 24, 2003

Set Name Query

side by side

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result set

DB=USPT; PLUR=YES; OP=OR

L10 ((corona adj discharge) and lithium and (battery or cell).clm.)

59 L10

DB=JPAB; PLUR=YES; OP=OR

L9 ((corona adj discharge) and (battery or cell)) and electrode

51 L9

DB=EPAB; PLUR=YES; OP=OR

L8 ((corona adj discharge) and (battery or cell)) and electrode

10 L8

DB=DWPI; PLUR=YES; OP=OR

L7 ((corona adj discharge) and (battery or cell)) and electrode

112 L7

L6 ((corona adj discharge) and (battery or cell))

214 L6

L5 ((corona adj discharge) and lithium and (battery or cell))

9 L5

L4 ((corona adj discharge) and lithium and (battery or cell) and oxide)

2 L4

DB=USPT; PLUR=YES; OP=OR

L3 ((corona adj discharge) and lithium and (battery or cell).clm. and oxide)

51 L3

L2 ((corona adj discharge) and lithium and (battery or cell) and oxide).clm.

0 L2

L1 (corona adj discharge) and lithium and (battery or cell) and oxide

185 L1

END OF SEARCH HISTORY

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L5: Entry 9 of 31

File: JPAB

Jun 9, 1998

PUB-NO: JP410154501A

DOCUMENT-IDENTIFIER: JP 10154501 A

TITLE: MANUFACTURE OF BATTERY SEPARATOR AND NONAQUEOUS SECONDARY BATTERY USING THE SAME

PUBN-DATE: June 9, 1998

INVENTOR-INFORMATION:

NAME

COUNTRY

SAEN, HAJIME

TOJO, YASUHISA

ASSIGNEE-INFORMATION:

NAME

COUNTRY

NITTO DENKO CORP

APPL-NO: JP08310907

APPL-DATE: November 21, 1996

INT-CL (IPC): H01 M 2/16; H01 M 10/40

ABSTRACT:

PROBLEM TO BE SOLVED: To provide as manufacturing method of a battery separator and a nonaqueous secondary battery using it in which active material particles fallen out of electrode material and suspending particulate in the air are not attracted to the surface thereof.

SOLUTION: After polyethylene and polypropylene are mixed at the rate of a mixing ratio (polyethylene: polypropylene) 5:5, the same is formed into film so as to obtain the film. Besides the same, second film made of a polypropylene single body is manufactured. The second films are respectively laminated on both faces of first film, and this laminated matter is heated (at 120°C), and is one shaft-drawn at a drawing rate 200% so that porous film of 25 μ m thick is taken up on core material. Corona discharge processing is conducted on both faces, front and back, of the porous film sequentially taken up on the core material in a take-up process so as to form electret to charge the surface of the porous film to -250V and the back face to +270V.

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Separator

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L5: Entry 8 of 9

File: DWPI

May 23, 1995

DERWENT-ACC-NO: 1995-221542
DERWENT-WEEK: 199529
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TITLE: Lithium ion battery mfr. - using corona discharge to pre:process surface collector object

PATENT-ASSIGNEE:

ASSIGNEE	CODE
SONY CORP	SONY

PRIORITY-DATA: 1993JP-0282744 (November 11, 1993)

PATENT-FAMILY:

PUB-NO	PUB-DATE	LANGUAGE	PAGES	MAIN-IPC
JP 07135023 A	May 23, 1995		006	H01M010/38

APPLICATION-DATA:

PUB-NO	APPL-DATE	APPL-NO	DESCRIPTOR
JP 07135023A	November 11, 1993	1993JP-0282744	

INT-CL (IPC): H01 M 4/64; H01 M 10/38

ABSTRACTED-PUB-NO: JP 07135023A

BASIC-ABSTRACT:

The manufacturing method involves application of an electrode agent slurry (4) to a metal foil collector object (1). This is preceded by the corona discharge processing of the collector object surface from a corona discharge electrode (2).

ADVANTAGE - Reduces deterioration of charging and discharging characteristics.
Reduces deterioration of load curve. Improves operativity.

CHOSEN-DRAWING: Dwg.1/6

TITLE-TERMS: LITHIUM ION BATTERY MANUFACTURE CORONA DISCHARGE PRE PROCESS SURFACE COLLECT OBJECT

DERWENT-CLASS: L03 X16

CPI-CODES: L03-E03;

EPI-CODES: X16-B01; X16-E02;

SECONDARY-ACC-NO:

CPI Secondary Accession Numbers: C1995-102185
Non-CPI Secondary Accession Numbers: N1995-173612

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L4: Entry 6 of 29

File: DWPI

Apr 23, 1999

DERWENT-ACC-NO: 1999-318827

DERWENT-WEEK: 199931

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TITLE: Hydrogen absorbing alloy electrode used as cathode for alkali secondary battery - has metal core with predetermined index

PATENT-ASSIGNEE:

ASSIGNEE

SANYO ELECTRIC CO LTD

CODE

SAOL

PRIORITY-DATA: 1997JP-0266907 (September 30, 1997)

PATENT-FAMILY:

PUB-NO	PUB-DATE	LANGUAGE	PAGES	MAIN-IPC
JP 11111303 A	April 23, 1999		006	H01M004/66

APPLICATION-DATA:

PUB-NO	APPL-DATE	APPL-NO	DESCRIPTOR
JP 11111303A	September 30, 1997	1997JP-0266907	

INT-CL (IPC): H01 M 4/24; H01 M 4/26; H01 M 4/66; H01 M 4/74

ABSTRACTED-PUB-NO: JP 11111303A

BASIC-ABSTRACT:

BAD DATE

NOVELTY - A mixture of electrode material containing hydrogen absorbing alloy powder is applied on the surface of a core which is a metal plate with an index of 35 dyns or more.

USE - Used as cathode for alkali secondary battery such as nickel hydrogen storage battery.

ADVANTAGE - The wetness on the surface of metal core, and the adhesion of core and hydrogen absorbing alloy electrode material mixture is improved since corona discharge process is performed on core surface. The conductivity between alloy powder and core is improved. The deterioration of electrode is suppressed. Electrode with good cycle characteristics is provided.

CHOSEN-DRAWING: Dwg.1/2

TITLE-TERMS: HYDROGEN ABSORB ALLOY ELECTRODE CATHODE ALKALI SECONDARY BATTERY METAL CORE PREDETERMINED INDEX

DERWENT-CLASS: E36 L03 M22 X16

CPI-CODES: E11-S; E31-A02; L03-E01B5; M22-H03G;

EPI-CODES: X16-E02; X16-E05;

CHEMICAL-CODES:

Chemical Indexing M3 *01*

Fragmentation Code

C101 C550 C810 M411 M720 M903 M904 M910 N104 Q454

Specific Compounds

01532K 01532P

Registry Numbers

1532P 1532U

UNLINKED-DERWENT-REGISTRY-NUMBERS: 1532P; 1532U

SECONDARY-ACC-NO:

CPI Secondary Accession Numbers: C1999-094064

Non-CPI Secondary Accession Numbers: N1999-239044

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L4: Entry 6 of 29

File: DWPI

Apr 23, 1999

DERWENT-ACC-NO: 1999-318827

DERWENT-WEEK: 199931

COPYRIGHT 2003 DERWENT INFORMATION LTD

TITLE: Hydrogen absorbing alloy electrode used as cathode for alkali secondary battery - has metal core with predetermined index

Basic Abstract Text (1):

NOVELTY - A mixture of electrode material containing hydrogen absorbing alloy powder is applied on the surface of a core which is a metal plate with an index of 35 dyns or more.

Basic Abstract Text (2):

USE - Used as cathode for alkali secondary battery such as nickel hydrogen storage battery.

Basic Abstract Text (3):

ADVANTAGE - The wetness on the surface of metal core, and the adhesion of core and hydrogen absorbing alloy electrode material mixture is improved since corona discharge process is performed on core surface. The conductivity between alloy powder and core is improved. The deterioration of electrode is suppressed. Electrode with good cycle characteristics is provided.

Standard Title Terms (1):

HYDROGEN ABSORB ALLOY ELECTRODE CATHODE ALKALI SECONDARY BATTERY METAL CORE
PREDETERMINED INDEX

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L6: Entry 1 of 3

File: EPAB

Mar 27, 2002

PUB-NO: EP001191618A1
DOCUMENT-IDENTIFIER: EP 1191618 A1
TITLE: RECHARGEABLE BATTERY USING NONAQUEOUS ELECTROLYTE

PUBN-DATE: March 27, 2002

INVENTOR-INFORMATION:

NAME

KIMURA, KENJI

OMORI, KEISUKE

UEMOTO, SEIICHI

COUNTRY

JP

JP

JP

ASSIGNEE-INFORMATION:

NAME

MATSUSHITA ELECTRIC IND CO LTD

COUNTRY

JP

APPL-NO: EP00915442

APPL-DATE: April 7, 2000

PRIORITY-DATA: JP10074999A (April 8, 1999)INT-CL (IPC): H01 M 4/02; H01 M 10/40; H01 M 2/16

ABSTRACT:

CHG DATE=20020503 STATUS=O> In a nonaqueous electrolyte rechargeable battery in which a positive electrode plate (1) and a negative electrode plate (2) are superimposed with a separator (3) interposed between them, and are accommodated in a battery case (4) together with electrolyte, corona discharge treatment is performed on the positive electrode material (1a) or the manufactured positive electrode plate (1). Improved affinity between the positive electrode material (1a) of the positive electrode plate (1) and the electrolyte shortens the pouring time of the electrolyte and enables the lithium ions (10) to easily reach the surface of the positive electrode material (1a), thereby improving the charging/discharging characteristic of the battery. ☐

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L4: Entry 4 of 29

File: DWPI

Feb 18, 2000

DERWENT-ACC-NO: 2000-229617

DERWENT-WEEK: 200020

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TITLE: Non-aqueous lithium electrolyte battery, has electrode for corona discharge configured in vicinity of positive and negative electrode terminals

PATENT-ASSIGNEE:

ASSIGNEE

MATSUSHITA DENKI SANGYO KK

CODE

MATU

PRIORITY-DATA: 1998JP-0217248 (July 31, 1998)

PATENT-FAMILY:

PUB-NO

JP 2000048829 A

PUB-DATE

February 18, 2000

LANGUAGE

PAGES

005

MAIN-IPC

H01M006/16

APPLICATION-DATA:

PUB-NO

JP2000048829A

APPL-DATE

July 31, 1998

APPL-NO

1998JP-0217248

DESCRIPTOR

INT-CL (IPC): H01 M 6/16

BAD DATE

ABSTRACTED-PUB-NO: JP2000048829A

BASIC-ABSTRACT:

NOVELTY - The positive electrode jar has a vent which is sealed by negative electrode jar (1) through a gasket (3). The electrode (4) for corona discharge is configured in the vicinity of the electrode terminals resulting in conduction. A part of the battery capacitance is discharged.

DETAILED DESCRIPTION - An INDEPENDENT CLAIM is also included for the non-aqueous lithium electrolyte battery manufacturing method.

USE - For non-aqueous lithium electrolyte battery e.g. nickel cadmium battery of various shapes such as coin type, button type, cylinder type, square type, paper type.

ADVANTAGE - Excellent battery characteristic is obtained with reduced preburn time.

DESCRIPTION OF DRAWING(S) - The figure shows the battery and the electrode for corona discharge.

Negative electrode jar 1

Gasket 3

Electrode 4

CHOSEN-DRAWING: Dwg.1/1

TITLE-TERMS: NON AQUEOUS LITHIUM ELECTROLYTIC BATTERY ELECTRODE CORONA DISCHARGE CONFIGURATION VICINITY POSITIVE NEGATIVE ELECTRODE TERMINAL

DERWENT-CLASS: L03 X16

CPI-CODES: L03-E02;

EPI-CODES: X16-A02;

SECONDARY-ACC-NO:

CPI Secondary Accession Numbers: C2000-070204

Non-CPI Secondary Accession Numbers: N2000-172825

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L3: Entry 20 of 47

File: USPT

Dec 2, 1997

DOCUMENT-IDENTIFIER: US 5693105 A

TITLE: Battery and its fabrication method

Detailed Description Text (25):

Also, the surface of the insulator on which active material or collectors are provided is desirably subjected to corona discharge treatment, plasma treatment, treatment with coupling agent, or etching treatment in order to enhance the contactness. The source gases for the plasma for use with the plasma treatment include gases of hydrogen, oxygen, nitrogen, argon, ammonia, and hydrocarbon. The coupling agents may include a silane coupling agent, and a titanate coupling agent.

Detailed Description Text (78):

First, after the scored cut line was entered at the folding part of polypropylene non-woven fabric, the surface was subjected to corona discharge treatment. A positive electrode active material was prepared by mixing acetylene black, nickel super fine powder, Lumifron (fluororesin, manufactured by Asahi Glass) into manganese dioxide, adding xylene, and adjusting the viscosity.

Detailed Description Text (84):

In FIG. 8, a manganese dioxide paste prepared in the same way as in the embodiment 1 was printed by screen printing on positive electrode forming regions 801 on a polypropylene film 800 having a micropore structure subjected to corona discharge treatment. Then, nickel mesh collectors 802 with nickel foil leads were laid thereon, and lithium foils having nickel mesh collectors 804 pressure connected were laid on negative electrode forming regions 803 on the propylene film and dried. Then, it was sandwiched between an aluminum laminate film having an aluminum foil laminated with a resin film, and a separator of polypropylene non-woven fabric, and then passed through a heating roll for the pressure connection. An electrolysis solution equivalent to that of the example 1 was penetrated into the separator at each of the positive electrodes and negative electrodes, folded at the E-F line to fuse together the aluminum laminate film, the polypropylene film, and the separator around the positive electrodes and the negative electrodes, as shown in FIGS. 9A and 9B. FIG. 9A is a cross-sectional view of a cell obtained by lamination. In FIGS. 8 and 9A and 9B, 800 is a polypropylene film, 801 is a positive electrode, 803 is a negative electrode, 802 and 804 are collectors, 805 is a separator, 806 is an aluminum laminate film, and 807 is a fusing part. The above-mentioned fusing process is to separate adjacent unit cells at the fusing part 807. Without this separation, an electromotive force may occur between adjacent positive and negative electrodes, despite the serialization within the cell, so that twice the voltage of the unit cell can not be attained.

Detailed Description Text (89):

First, after the scored cut line was entered at the folding part of polyamide non-woven fabric, the surface was subjected to corona discharge treatment. A negative electrode active material paste was prepared by mixing foliate graphite, nickel super fine powder, polyethylene powder, and polyvinyl alcohol powder into Mm (misch metal)-Ni--Ti--Zr--Mn--V--Co alloy powder, and adding tetrahydrofuran thereto, with the viscosity adjusted. A positive electrode active material paste was prepared by mixing nickel powder, cobalt monoxide, foliate graphite, polyethylene powder, and polyvinyl alcohol powder, in various shapes such as flake, spheroidal, and spicular shapes, into nickel hydroxide, and adding tetrahydrofuran thereto, with the viscosity adjusted.

CLAIMS:

1. A method for producing a battery comprising the steps of:

forming, on an organic polymer sheet insulating member, a positive pole region having a positive electrode active material and a negative pole region having negative electrode active material separately from each other;

arranging the positive pole region and the negative pole region to oppose each other;

fusing the sheet insulating member at blank sections where the positive pole region and the negative pole region are not provided to form unit cells; and

arranging the unit cells into a housing.

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L3: Entry 32 of 47

File: USPT

Aug 23, 1994

DOCUMENT-IDENTIFIER: US 5340672 A

TITLE: Secondary battery

Detailed Description Text (4):

The surface of the porous membrane is preferably subjected to hydrophilic treatment. Examples of such a hydrophilic treatment include glow discharge treatment, corona discharge treatment, plasma treatment, and coating of a surface active agent. Preferred among these hydrophilic treatments are glow discharge treatment, corona discharge treatment, and plasma treatment.

Detailed Description Text (119):

A 30 cm.times.30 cm porous polypropylene film (Julagard 2500 available from Dical Kagaku K.K.) was applied on a polyethylene terephthalate sheet. The material was then subjected to corona discharge treatment at an energy density of 1.8 J/cm.sup.2 at a rate of 28 m/m.

CLAIMS:

1. A secondary battery comprising,

(a) a negative electrode,

(b) a positive electrode,

(c) an electrolyte comprising a dissolved alkaline metal salt, and

(d) a separator comprising a high molecular solid electrolyte membrane formed by coating a latex on both surfaces of a porous membrane, and then drying the coated latex,

wherein said latex to be coated on said porous membrane is represented by the following formula (1):

--(A).sub.a --(B).sub.b --(C).sub.c (D).sub.d -- (1)

wherein A represents a repeating unit obtained by polymerizing a monomer having one polymerizable ethylenically unsaturated group and having nonpolar groups connected to side chain ester groups and amide groups or a monomer having one polymerizable ethylenically unsaturated group and having a nonpolar group in side chains; B represents a repeating unit obtained by polymerizing a monomer having one polymerizable ethylenically unsaturated group and having polar groups connected to side chain ester groups and amide groups or a monomer having one polymerizable ethylenically unsaturated group and having a cyano group; C represents a repeating unit obtained by polymerizing a monomer having at least two polymerizable ethylenically unsaturated groups, at least one of which being in side chains; D represents a repeating unit obtained by polymerizing a monomer having one polymerizable ethylenically unsaturated group and having crosslinkable groups in side chains; and a, b, c and d represent a percentage molar fraction of 0 to 95, 5 to 95, 1 to 20, and 1 to 80, respectively.

2. The secondary battery according to claim 1, wherein B represents acrylonitrile, methacrylonitrile, or a compound according to the following formula (3): ##STR19## wherein R.sub.4 represents a hydrogen atom or a methyl group; X.sub.2 represents a divalent connecting group; R.sub.5 is --(CH(R.sub.6)CH(R.sub.7)O).sub.m --R.sub.6 or

--X.sub.3 --R.sub.9 ; R.sub.6, R.sub.7 and R.sub.8 each is a hydrogen atom or a C.sub.1-5 alkyl group; m is an integer of 1 to 50; X.sub.3 is a C.sub.1-10 alkylene group; R.sub.9 represents a polar group other than a chain ether.

3. The secondary battery according to claim 2, wherein B represents a compound according to formula (3) in which R.sub.9 represents a cyclic ether group or a carbonic ester group.

4. The secondary battery according to claim 2, wherein B represents a compound according to formula (3) in which R.sub.9 represents a 3- to 12-membered cyclic ether group, a 5- to 7-membered cyclic carbonic ester group, or a C.sub.2-7 (including carbon atoms contained in the carbonyl group) noncyclic carbonic ester group.

5. The secondary battery according to claim 2, wherein R.sub.9 represents a 3- to 8-membered cyclic ether group, a 5- or 6-membered cyclic carbonic ester group, or a C.sub.2-5 (including carbon atoms contained in the carbonyl group) noncyclic carbonic ester group.

6. The secondary battery according to claim 2, wherein B represents acrylonitrile.

7. The secondary battery according to claim 2, wherein B represents methacrylonitrile.

8. The secondary battery according to claim 1, wherein the drying time is from 1 to 240 hours.

9. The secondary battery according to claim 8, wherein the drying time is from 1 to 100 hours.

10. The secondary battery according to claim 9, wherein the drying time is from 5 to 50 hours.

11. The secondary battery according to claim 1, wherein an elastomeric high molecular compound is added to said latex to be coated on said porous membrane.

12. The secondary battery according to claim 1, wherein said negative electrode comprises an active material selected from the group consisting of alkaline metal, alkaline metal alloy, carbon material and transition metal chalcogenide.

13. The secondary battery according to claim 1, wherein the latex is coated at a thickness on one side of from 1 to 50 .mu.m.

14. The secondary battery according to claim 1, wherein the latex is coated at a thickness on one side of from 1 to 25 .mu.m.

15. The secondary battery according to claim 1, wherein A represents a compound according to the following formula (2): ##STR20## wherein R.sub.1 represents a hydrogen atom or a methyl group; X.sub.1 represents a divalent connecting group; R.sub.2 represents a hydrogen atom, an alkyl group, an alkenyl group, an alkynyl group, an aralkyl group, or an aryl group.

16. The secondary battery according to claim 1, wherein C represents a compound according to the following formula (4):

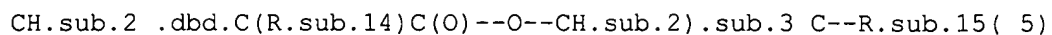
CH.sub.2 .dbd.C(R.sub.10)C(O)--X.sub.4 --(O)C(R.sub.11)C.dbd.CH.sub.2 (4)

wherein R.sub.10 and R.sub.11 each represents a hydrogen atom or a methyl group; X.sub.4 represents --NH--X.sub.5 --NH-- or --O--X.sub.5 --O--; X.sub.5 represents an alkylene group or --(CH(R.sub.12)CH(R.sub.13)O).sub.n ; R.sub.12 and R.sub.13 each is a hydrogen atom or a C.sub.1-5 alkyl group; and

n is an integer of 1 to 20.

17. The secondary battery according to claim 1, wherein C represents a compound

according to the following formula (5):



wherein R.sub.14 each represents a hydrogen atom or a methyl group and R.sub.15 represents a C.sub.1-10 alkyl group.

18. The secondary battery according to claim 1, wherein D represents a compound containing an epoxide group, an amino group, a carboxyl group, an acid anhydride group, a hydroxyl group, an amide group, an N-methylolamide group, or an ether of N-methylolamide or isocyanate.

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L3: Entry 39 of 47

File: USPT

Oct 7, 1986

DOCUMENT-IDENTIFIER: US 4615108 A

TITLE: Process for the manufacture of bipolar electrodes and separators

Brief Summary Text (22):

As previously described, the battery of the subject invention comprises a cell envelope or shell constructed from a multiplicity of bipolar electrodes made in part of a thermoplastic material. The bipolar electrodes comprise interior regions having electrochemical active substances separated by thermoplastic separators. The electrodes and separators are joined to one another at their margin portions and, if appropriate, include stiffening end plates. Initially, the electrodes, separators and any stiffening end plates as an assemblage are pressed or squeezed together and are continuously maintained in that condition while the margins thereof are melted by means of a heated plate, such as a metal platen. The heated plate is positioned adjacent to or in contact with the marginal portions of the electrode and separator assemblage to melt the same. The melted marginal portions while pressed together are then caused to solidify, preferably by the use of a coolant such as air. In the prior art batteries described earlier in this description, the cell components were bonded to one another and the assemblage of cell elements were maintained by means of tensioning screws or the like so as to provide a further seal during battery operation. Since both the electrodes and the separators can be constructed from material such as polypropylene and polypropylene and these materials are not particularly suitable for adhesive bonding due to their highly inert chemical composition, it became necessary when using adhesive as an added step to prepare the electrodes and separator surfaces to accommodate the adhesive. Preparation of the electrodes and the separators by this added step involved either etching, roughening, treatment by corona discharges or the like. It has been a continuing unsolved problem in the above described method as to how the bromine resistant components can be joined tightly together without, at the same time, having the adhesive material cause blockage of the narrow or fine channels in the electrolyte access channels provided in the separators or in the electrodes. It was a surprising and unexpected result that by the use of the above described heat sealing process an electrochemical cell could be produced which possesses requisite mechanical load bearing capacity and guarantees complete freedom from leaks.

CLAIMS:

1. A process for the manufacture of an assemblage of bipolar electrodes and separators each having thermoplastic marginal portions into electrochemical cells utilizing circulating aqueous electrolyte comprising the stages of:

squeezing the assemblage of electrodes and separators against one another with said thermoplastic marginal portions in an overlapping relationship;

heating at least a portion of said marginal portions whereby said portion is softened to substantially its melting point to cause said marginal portions to form an enveloping shell; and,

permitting the melted portions to cool and solidify while continuing to maintain the squeezing pressure.

3. The process of claim 1 comprising the further steps of:

positioning hose-like members between the marginal portions of the assemblage of electrodes and separators prior to squeezing the assemblage; and,

maintaining said hose-like members so positioned throughout the squeezing, heating and cooling steps.